

**II. AMENDMENT TO THE CLAIMS**

**COMPLETE LIST OF CLAIMS THAT ARE OR HAVE BEEN BEFORE THE OFFICE  
AFTER ENTRANCE OF THE AMENDMENTS MADE HEREIN**

The following claims constitute a complete list of claims that are or have been before the office after entrance of the amendments made herein. Amendments to the claims are indicated in accord with Revised 37 C.F.R. §1.121. In accord with such regulation, the listing of claims set forth below replaces all prior versions, and listings, of claims in the application:

**--CLAIMS AS PENDING IN THE APPLICATION WITH AMENDMENTS MADE  
HEREIN START ON NEXT PAGE--**

**1.-15. (CANCELLED)**

**16. (CURRENTLY AMENDED)** The method of claim [[15]] 47, further comprising:  
processing substantially only rare cell areas to generate a biologically identifying signal.

**17. (CANCELLED)**

**18. (CURRENTLY AMENDED)** The method of claim 16, further comprising: acquiring an image of a rare cell area of the optical field containing a body fluid or tissue smear, the rare cell area defined by the rare cell data [[set]]; and recording presence of the biologically identifying signal in the rare cell area.

**19. – 39. (CANCELLED)**

**40. (CURRENTLY AMENDED)** The method of claim 47 [[44]], wherein the digitized color image signal is derived through a computer-aligned plurality of microscope objectives from a large field sample.

**41. (CURRENTLY AMENDED)** The method of claim 47 [[44]], wherein the rare cell is present at a concentration of 0.001%, 0.0001%, 0.00001%, or 0.000001%.

**42. – 44. (CANCELLED)**

**45. (CURRENTLY AMENDED)** A computer software product for use in a computerized microscopic vision system comprising a computer-readable storage medium containing a sequence of computer-directed steps to identify automatically a rare cell image, in accordance with claim [[44]] 47.

**46. (CANCELLED)**

**47. (NEW)** A computer-controlled method for automated rare cell image identification, comprising the programmed steps of instructions of:

- (i) starting a microscope objective from an origin (x<sub>1</sub>,y<sub>1</sub>) of an optical field to locate and digitize a native or stained color image of a rare cell candidate or a cell blob containing a rare cell candidate, and digitally record and store x and y coordinates as well as focal y-z coordinates thereof,
- (ii) measuring pre-set criteria of the digitized image of a cell or cell nucleus, in terms of size, morphology, and characteristic cell markers, while enhancing detection of said rare cell color image signal by applying a computer-stored signal mask with limiting pixel values, and
- (iii) identifying said detected rare cell by using the automatically recorded coordinates of said rare cell to locate over said rare cell a computer-controlled reagent dispensing system programmed to apply selectively a specific tag or label to said rare cell *in situ*.